



The Relationship Between Knowledge Level and Participation in Non -Communicable Disease Screening Among Universiti Sains Malaysia Students

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Abstract

This study aims to explore the relationship between the knowledge level of Universiti Sains Malaysia students and their participation in non-communicable disease (NCD) screenings. Using a descriptive correlational design, this study involved 37 students selected through purposive sampling techniques. The research instrument was a questionnaire that measured knowledge level about NCDs and participation in screening programs. The results showed that the majority of students had poor knowledge about NCDs, with 43.2% falling into the low knowledge category. Participation in screenings was also low, with only 37.8% of students participating. The Chi-Square test indicated a significant relationship between knowledge level and participation in screenings ($p\text{-value} = 0.013$). This data suggests that students with better knowledge are more likely to participate in screening programs. Recommendations from this study include enhancing health education programs, improving screening accessibility, and utilizing digital technology to disseminate information. These efforts are expected to increase participation in NCD screenings among students.

Keywords: Non-Communicable Diseases (NCDs), Health Screening, Knowledge Level, Student Participation, Health Education

Introduction

Non-communicable diseases (NCDs), such as diabetes, hypertension, and heart disease, are becoming increasingly concerning on a global scale. According to data from the World Health Organization (WHO), NCDs account for more than 70% of deaths worldwide each year. This underscores the critical importance of prevention and early detection efforts to reduce incidence rates and mitigate the impacts (WHO, 2021).

The 2023 National Health and Morbidity Survey (NHMS) has revealed alarming data regarding the prevalence of non-communicable diseases in Malaysia. The survey results show that nearly 2.3 million adults in the country are living with combinations of three common non-communicable diseases. These combinations include diabetes, hypertension, high cholesterol, and obesity. These figures highlight the significant health burden in Malaysia, where a substantial portion of the adult population faces serious health risks due to these conditions. This data provides a more specific picture of the pattern of non-communicable disease combinations among Malaysian adults. The survey found that 5.1% of the adult population suffers from diabetes, hypertension, and high cholesterol simultaneously. Additionally, 2.9% of individuals have a combination of hypertension, high cholesterol, and obesity. Meanwhile, 1.2% of the population experiences diabetes, hypertension, and obesity, while another 0.4% suffer from diabetes, high cholesterol, and obesity. These data indicate that various combinations of non-communicable diseases occur within the community and necessitate a comprehensive health approach to address them (NHMS, 2023).

Health screening is an effective method for early detection of non-communicable diseases. By undergoing screening, individuals can become aware of their health status earlier and take necessary preventive measures. However, participation in screening programs often depends on the individual's level of knowledge about the benefits and importance of screening itself.

Students, as a young and productive age group, face significant risks related to non-communicable diseases. An unhealthy lifestyle, including poor dietary habits and lack of physical activity, often serves as the primary risk factors. Students at Universiti Sains Malaysia, similar to other students, are at high risk of non-communicable diseases due to their unhealthy lifestyles and insufficient physical activity. A study by Pergizi Pangan and NTTTP (2023) illustrates that students tend to engage in unhealthy behaviors that can lead to diseases.

Therefore, Universiti Sains Malaysia, as a leading educational institution, has a responsibility to facilitate awareness and participation in health programs among its students. Furthermore, research by Johnson and Wang (2022) shows that targeted educational interventions can significantly increase participation rates in health screening programs among students. This study aims to explore the relationship between the knowledge level of Universiti Sains Malaysia students and their participation in non-communicable disease screening. By understanding the factors that influence this participation, it is hoped that more effective strategies can be formulated to enhance awareness and engagement of students in the prevention of non-communicable diseases.

Adequate knowledge of non-communicable diseases and the importance of early detection significantly influences students' motivation to participate in screening programs. Targeted educational interventions can significantly increase student participation in preventive health activities, including health screenings. Therefore, understanding the relationship between students' knowledge levels and their participation in screenings is crucial as a basis for formulating more effective health intervention strategies on campus (R, Alka Anggraeni et al., 2024).

In addition to knowledge, participation in screenings is also influenced by easy access to health services, clear information, and support from the surrounding environment. An examination of these factors can help identify the obstacles faced by students and provide appropriate solutions to enhance their involvement. With increased participation, it is hoped that the prevalence of non-communicable diseases can be reduced, and student health will improve (Sunarto & Winarti, 2024).

Knowledge plays a crucial role in shaping health behaviors, including in early detection and prevention programs for non-communicable diseases. The higher an individual's understanding of the risks and benefits of prevention, the more likely they are to take appropriate steps, such as participating in regular screenings. Preventive actions heavily depend on one's level of knowledge about health issues and how to address them. Therefore, improving health literacy is a critical step to strengthen student participation in screening programs (Ameliya, N. 2024).

Students at Universiti Sains Malaysia are expected to have a better understanding of health issues. However, knowledge alone is not enough to improve preventive behavior. Although students possess basic knowledge about non-communicable diseases and screenings, their level of engagement remains low. Several reasons, such as a lack of priority on health, fear of diagnosis results, and time constraints, hinder participation. This indicates that, besides knowledge, it is also important to increase critical awareness about the benefits of early detection (Emilia et al., 2019).

In addition to understanding the definition and symptoms of non-communicable diseases, knowledge also encompasses the ability to apply lifestyle changes and preventive measures. Health education programs on campus can strengthen students' awareness of risks and prevention of diseases. At Universiti Sains Malaysia, educational activities through seminars, health campaigns, and digital information are effective means to improve health literacy. With better understanding, it is expected that students will be more encouraged to actively participate in screening programs as a form of responsibility for their personal health (Efendi & Makhfudli, 2009).

Based on the above background, this study aims to determine the relationship between the knowledge level of Universiti Sains Malaysia students about non-communicable diseases and their participation in health screening programs. Through the results of this research, it is hoped that deeper insights into student participation patterns can be obtained, as well as formulating relevant policy recommendations for the university to enhance student awareness and involvement in efforts to prevent non-communicable diseases.

Methods

This study uses a descriptive correlational design to explore the relationship between knowledge level and participation in non-communicable disease screening among Universiti Sains Malaysia students. The study population consists of all Universiti Sains Malaysia

students, with the sample taken using purposive sampling techniques. A total of 37 students were included in the sample, determined using the Slovin formula.

The research instrument was a questionnaire consisting of two parts: the first part measured the knowledge level about non-communicable diseases and health screening, while the second part measured participation in screening programs. This questionnaire had been tested for validity and reliability through prior pilot testing (Creswell, 2014).

Data was collected through the distribution of online questionnaires via a survey platform and analyzed using descriptive statistics to describe respondent characteristics as well as their knowledge level and participation rates. The significance of the relationship was tested using the Chi Square test with SPSS software version 25 (Field, 2013). The study by Sallis et al. (2000) supports the use of correlational analysis to explore the relationship between lifestyle variables and health.

Results

In Table 1, the distribution of students' knowledge levels about non-communicable diseases shows significant variation. Of the 37 students surveyed, 43.2%, or 16 individuals, were categorized as having a poor knowledge level. This indicates that nearly half of the student population surveyed lacks adequate understanding of non-communicable diseases. These figures highlight a significant knowledge gap that needs to be addressed to improve their awareness of the risks and prevention of non-communicable diseases.

Conversely, 32.4%, or 12 students, fall into the category of having a fair knowledge level. These students have a basic understanding of non-communicable diseases but still require additional information to deepen their knowledge. This presentation indicates that there is a group of students who have begun to recognize the importance of knowledge about non-communicable diseases, although further improvement is still needed.

Only 24.3%, or 9 students, have a good knowledge level. Students in this category demonstrate a more comprehensive understanding of non-communicable diseases. They not only understand the risk factors but also the preventive measures that can be taken. This number indicates that a small portion of students already possess adequate knowledge and can act as change agents in raising awareness among their peers.

In Table 2, the research results indicate that of the 37 students who responded, there is a variation in their participation levels in non-communicable disease screening. A total of 62.2%, or 23 students, reported not participating in health screenings. This figure shows that the majority of students in this study chose not to engage in the organized non-communicable disease screening programs.

Table 1

Distribution of Frequency of Knowledge Levels About Non-Communicable Diseases Among Students at Universiti Sains Malaysia

	Knowledge Level	Frequency	Percentage
1	Poor	16	43,2%
2	Fair	12	32,4%
3	Good	9	24,3%
Total		37	100%

Note. This table shows the frequency distribution of knowledge levels about non-communicable diseases among students at Universiti Sains Malaysia.

Table 2

Distribution of Frequency of Participation in Non-Communicable Disease Screening Among Students at Universiti Sains Malaysia

	Participation	Frequency	Percentage
1	Not Participated	23	62,2%
2	Participated	14	37,8%
Total		37	100%

Note. This table shows the distribution of the frequency of participation in non-communicable disease screening among students at Universiti Sains Malaysia.

On the other hand, 37.8%, or 14 students, reported participating in non-communicable disease screening. Although this participation percentage is lower compared to those who did not participate, this data still shows that there is a group of students who recognize the importance of non-communicable disease screening and choose to be involved in these activities. These results provide a clear picture of student participation in health screening programs, indicating a significant gap between those who participate and those who do not.

Based on Table 3, it can be seen that out of the total 37 students surveyed, 43.3% (16 individuals) have a knowledge level categorized as poor. Among this group, only 8.1% (3 individuals) participated in screening, while the majority, 35.2% (13 individuals), did not participate. This indicates that most students with low knowledge levels tend not to participate in screening activities.

Table 3

Relationship Between Knowledge Level and Participation in Non-Communicable Disease Screening Among Universiti Sains Malaysia Students

Knowledge Level	Participation				Total		P Value
	Participated		Not Participated				
	F	%	F	%	F	%	
Poor	3	8,1	13	35,2	16	43,3	0,013
Fair	4	10,8	8	21,6	12	32,4	
Good	7	18,9	2	5,4	9	24,3	
Total	14	37,8	23	62,2	37	100	

Note. This table analyses the relationship between knowledge level and participation in non-communicable disease screening among Universiti Sains Malaysia students.

Next, the group of students with a fair knowledge level consists of 32.4% (12 individuals) of the total respondents. Among them, 10.8% (4 individuals) participated in screening, while 21.6% (8 individuals) did not participate. Although this group shows an increase in participation compared to the poor knowledge group, participation in screening is still relatively low.

Meanwhile, students with a good knowledge level comprise only 24.3% (9 individuals) of the respondents. However, within this group, there is a higher percentage of participation in screening, namely 18.9% (7 individuals), and only 5.4% (2 individuals) did not participate. This data suggests that the better the students' knowledge, the more likely they are to participate in health screenings. Based on the Chi-Square test conducted to examine the relationship between students' knowledge levels and their participation in non-communicable disease screenings, a p-value of 0.013 or < 0.05 was obtained. This indicates that there is a statistically significant relationship between the knowledge level of Universiti Sains Malaysia students and their participation in screening activities.

Discussion

Students' Knowledge Level

The results of this study show the distribution of students' knowledge levels about non-communicable diseases among the 37 students surveyed. 43.2% or 16 students were categorized as having a poor knowledge level. This indicates that most students do not have an adequate understanding of non-communicable diseases. Meanwhile, 32.4% or 12 students have a fair knowledge level, meaning they have some basic understanding but still need additional information to improve their knowledge. Only 24.3% or 9 students were

categorized as having a good knowledge level, reflecting that they have a sufficient understanding of non-communicable diseases.

Factors influencing the knowledge level at Universiti Sains Malaysia can include various aspects such as educational background, access to health information, and involvement in health activities. For instance, students majoring in health-related fields tend to have better knowledge about non-communicable diseases compared to those who do not. Access to information is also crucial—students who frequently attend health seminars or workshops are likely to have better knowledge. In the context of education, the social learning theory emphasizes the importance of social models, observation, and a supportive environment in enhancing learning and development (Warini Sisin et al., 2023). In this regard, students who often interact with peers or professionals knowledgeable about non-communicable diseases are more likely to improve their understanding.

In addition to educational factors and access to information, intrinsic motivation plays a crucial role in determining students' knowledge levels and their involvement in screening programs. Students who are aware of the importance of maintaining health are generally more proactive in seeking information and engaging in preventive activities. Conversely, those who lack motivation tend to ignore preventive measures until symptoms or emergency situations arise (Khasanah, N. et al., 2023).

The role of the campus in supporting health education programs is vital. Activities such as seminars, campaigns, and integrated sports within the academic environment can motivate students to be more concerned about their health. A campus that incorporates health education into its activities has the potential to encourage positive behavioral changes. Additionally, collaboration between the university and public health service providers in organizing screenings can increase student involvement in disease prevention (Rogahang, S. S.N., 2024).

Social and cultural challenges also serve as barriers to screening participation. Some students are concerned about the screening results or anxious about the reactions of their surroundings if certain health conditions are discovered. Therefore, it is important for the campus not only to provide information but also to create a culture that supports early detection and disease prevention. Approaches through community activities and peer education can help overcome these barriers and build better awareness among students (Damayant, M., 2021).

This aligns with the research by Nouval Fikrie Keandre et al. (2021), which shows that students from health-related majors have higher levels of knowledge about health screening compared to students from non-health majors. Keandre found that a more in-depth curriculum and higher exposure to information in health majors significantly contribute to better knowledge about screening. This indicates that formal education and academic environments related to health fields have a positive impact on students' understanding of the importance of health screening.

This finding is consistent with the research by Kholijah, K., & Dewi, S. S. (2023), which revealed that the knowledge level of students about non-communicable diseases, particularly diabetes, in Medan City is generally inadequate. This is evident from the results showing that 63.5% of students gave incorrect answers to knowledge-related questions, while only 36.5% answered correctly. These data indicate an urgent need to enhance health education programs among students. Interventions such as seminars, workshops, or health campaigns can be designed to improve knowledge and awareness about non-communicable diseases, which in turn can contribute to better preventive behaviors among students. Additionally, collaboration with authorities and health service providers is essential to strengthen these interventions. Engaging students in practical activities such as regular health check-ups and exercise can also increase their awareness and understanding of the importance of preventing non-communicable diseases. Consequently, a comprehensive and sustainable approach will result in significant and positive behavioral changes among students.

Researchers assume that students possess inadequate knowledge about the topic under study because most of them do not come from a health education background. It is assumed that non-health students may not have a deep understanding or adequate access to medical or health information compared to students who are directly studying health sciences. The lack of exposure to health-related materials and concepts is expected to affect their knowledge level, resulting in lower understanding of this specific topic.

Students' Participation in Non-Communicable Disease Screening

Based on a survey related to student participation in non-communicable disease health checks, out of 37 students surveyed, 62.2% or 23 students did not take health checks, while 37.8% or 14 students took health checks. Low participation in health screenings can be caused by a variety of factors, including a lack of information about the importance of screening, accessibility, or even economic conditions. In comparison, in Finland, the participation rate of students in the two-stage health screening is 83%, with only 17% of students not using health services at all. This shows that student participation in Finland is much higher compared to a survey conducted at Universiti Sains Malaysia where only 37.8% of students took a health check-up. Factors contributing to the high participation in Finland include the existence of a structured health screening program and support from the Finnish Student Health Service (FSHS), which provides students with better information and access (Seilo et al., 2022).

The use of technology can also play a crucial role in enhancing participation in health screenings. A 2021 study found that a health app designed to remind students of screening schedules and provide health information significantly increased screening participation by 30% in the intervention group compared to the control group (Smith et al., 2021). This indicates that technology can be a highly effective tool in boosting screening participation.

Social and cultural aspects also contribute to the low participation rates of students in health screening programs. The stigma associated with diagnosis results or screening procedures can create discomfort and fear among students. Some students may worry that screening results showing health risks could affect their self-image or invite negative reactions from their peers. Therefore, it is essential for health interventions to consider psychological

and social factors to create a more supportive environment for student participation (Sulidah, 2019).

Additionally, many students view health services as necessary only when symptoms arise. They often feel that screening is unnecessary if they feel healthy, even though early detection allows for quicker intervention before diseases become more serious. Thus, continuous health education, including explanations of the benefits of screening for seemingly healthy individuals, can help change this perspective and increase involvement in prevention programs (Nurmala et al., 2020).

The development of information technology also holds significant potential for addressing participation barriers. Health apps that provide regular reminders, information about screening schedules, and health status monitoring can enhance student engagement. These technologies not only make it easier for students to access health services but also improve communication between students and health service providers (Sallo, A. K. M. et al., 2023).

Collaboration between universities and related parties is crucial in formulating more comprehensive health strategies and policies. Intervention programs that combine education, technology, and easy access to health services will create a more holistic approach. With this approach, it is hoped that student participation in health screenings will increase, contributing to the efforts to prevent and control non-communicable diseases among the younger generation (Nurjanah, A. et al., 2024).

This aligns with the study by Konny et al. (2023), which found that the factors influencing an individual's ability to undergo health screening are varied, with knowledge level being a particularly significant factor. In addition to knowledge level, other factors affecting participation include misconceptions about health screening, existing stigma and beliefs in society, personal and marital status priorities, economic growth, doctor's recommendations, age, previous health status, gender differences, ease of use and accessibility in healthcare facilities, and availability of time. Misunderstandings about the benefits and procedures of screening often lead to unwillingness to participate. For example, the belief that health screening is only necessary if there are clear symptoms can reduce participation.

Furthermore, previous research indicates that these factors significantly impact student participation in various health programs. For instance, the stress and mental health theory suggests that high stress levels can reduce individual motivation and ability to participate in health programs (Ab Malik et al., 2021). Additionally, the social welfare theory shows that economic and social factors also influence participation, with individuals facing economic difficulties being less likely to participate in health programs (Kementerian Kesehatan RI, 2023).

Researchers assume that the participation of Universiti Sains Malaysia students in non-communicable disease screening will tend to be low due to factors such as the level of knowledge. A lack of understanding or knowledge about the importance of screening and the

benefits of early detection may make students less motivated to participate in screenings. Thus, low participation rates may be due to limited information or education regarding non-communicable diseases and the importance of preventive measures through screening.

The Relationship Between Knowledge Level and Participation in Non-Communicable Disease Screening Among Students

Of the 37 students surveyed, the group with poor knowledge dominated the number of non-participants in screenings, accounting for 35.2% of the total respondents. In contrast, only 8.1% of the poor knowledge group participated in screenings. Students with a fair knowledge level showed an increase in participation, although still limited, with 10.8% participating and 21.6% not participating. The group with good knowledge showed a more positive trend, with 18.9% participating in screenings, while only 5.4% did not participate. These results indicate that the higher the students' knowledge levels, the more likely they are to participate in health screening activities, suggesting that efforts to enhance health education can encourage greater participation.

This research shows a significant relationship between the knowledge level of Universiti Sains Malaysia students about non-communicable diseases and their participation in health screening programs. Students with good knowledge of the risks and benefits of screening tend to be more aware of the importance of early detection, which can reduce the fear that often becomes a barrier to taking preventive actions. Therefore, proper education can be an effective strategy to encourage student participation in screening activities.

Social support from friends, family, and medical professionals also plays an important role in encouraging students to undergo health screenings. Research shows that individuals with strong social support are more likely to participate in health programs. By creating a positive environment, awareness of the importance of screening can increase, and the stigma associated with these activities can be minimized (Januragan, P. P. 2024).

Comprehensive health education should involve a multidisciplinary approach, involving collaboration between health faculties, student organizations, and public health institutions. In this way, more relevant and targeted programs can be created, making students feel more involved and responsible for their own health (Maduratna, E. S. et al., 2024).

Technology can be utilized to increase student involvement in screening programs. Health apps and digital platforms can be used to disseminate information, remind students about screening schedules, and connect them with health services. By leveraging technological advancements, universities can reach more students who may be difficult to access through traditional methods (Latifah, Elina D. K., 2023).

Economic aspects should also be considered in strategies to increase participation. Students facing financial difficulties may feel unable to afford health screenings, even though they are aware of their importance. Therefore, providing free or affordable screening services for students can be an effective solution (Utama, Zahera M., 2020).

Inclusive programs that are sensitive to student needs are also important to reduce stigma and increase participation. Considering the social and cultural backgrounds of students can help design more appropriate and relevant approaches. Additionally, interactive and engaging health events can encourage students to actively participate in screening activities (Syahada & Santoso., 2023).

The results of this study are consistent with related studies on factors influencing student participation in screenings, including knowledge level, academic and financial pressure, social stigma and perceptions, and social support and doctor recommendations. Students with better knowledge about non-communicable diseases and the benefits of early detection are more likely to participate in health screenings (Ab Malik et al., 2021). Academic pressure and financial issues also pose significant barriers to student participation (Farsida & Ikakom, 2023). Students who are busy with academic tasks or facing financial difficulties may find it challenging to allocate time or resources for health screenings. Stigma related to non-communicable diseases and social perceptions about health screenings can also affect participation (Konny et al., 2023). Students may feel embarrassed or anxious about screening results or believe that screening is unnecessary unless there are clear symptoms. Support from friends, family, and healthcare providers can enhance participation in health screenings. Research shows that recommendations from doctors and social support play crucial roles in encouraging individuals to engage in health activities (Johnson & Wang, 2022).

This study aligns with previous research in identifying factors that influence student participation in health screenings. For example, studies by Peng et al. (2020) and Ab Malik et al. (2021) also highlight the importance of knowledge and self-efficacy in promoting preventive behavior. However, there are some notable differences. This study specifically highlights the relationship between Universiti Sains Malaysia students' knowledge levels about non-communicable diseases and their participation in health screenings, which may not have been detailed in previous research. These results indicate that the higher the students' knowledge levels, the more likely they are to participate in health screening activities. This study also provides insights into how increasing health education can significantly boost participation in health screenings, something that may not have been extensively discussed in prior literature.

Furthermore, the research by Johnson and Wang (2022) emphasizes that targeted educational interventions can enhance self-efficacy and motivation to participate in health activities. Students who are provided with detailed information and supported with educational materials tend to feel more confident in making decisions to participate in health screenings. The study also shows that technology-based interventions, such as health apps that remind students about screening schedules and provide health information, have been proven to increase screening participation by 30% in the intervention group compared to the control group (Smith et al., 2021). Therefore, it is crucial for universities to provide comprehensive education programs and foster a supportive environment to enhance students' knowledge and participation in non-communicable disease screenings.

Researchers assume that there is a relationship between knowledge levels and participation in non-communicable disease screenings among students at Universiti Sains Malaysia. This assumption is based on the understanding that students with higher knowledge levels tend to have better awareness of the importance of early detection and disease prevention. Adequate knowledge is expected to motivate them to actively participate in screening activities as a preventive measure to maintain health. Conversely, students with lower knowledge levels may be less aware of the benefits of screening, resulting in lower participation rates. This aligns with a cross-sectional study in Malaysia which suggested that among various factors influencing preventive behavior, knowledge and self-efficacy stand out as the most significant predictors (Ab Malik et al., 2021).

Conclusion and Recommendation

This study shows that the knowledge level of Universiti Sains Malaysia students about non-communicable diseases is significantly related to their participation in health screenings. Of the 37 students surveyed, the majority had poor knowledge about non-communicable diseases, with 43.2% falling into the low knowledge category. Participation in screenings was also low, with only 37.8% of students participating. The data indicate that students with better knowledge are more likely to participate in screening programs. This underscores the importance of health education in increasing screening participation and preventing non-communicable diseases.

For future research, it is recommended to include other variables that may influence participation in non-communicable disease screenings, such as self-efficacy, attitudes towards screening, and social support. Research could also consider including demographic variables such as age, gender, and field of study to gain a deeper understanding of the dynamics of screening participation among various student groups.

Moreover, it is recommended to increase the sample size in future research to obtain more representative results and stronger generalization. Research with a larger sample size can provide a more comprehensive picture of the factors influencing participation in non-communicable disease screenings among students. Using more diverse sampling methods, such as stratified random sampling, can ensure that every student sub-group is well-represented in the study.

Future research can also focus on developing and testing more specific interventions to increase participation in health screenings, such as senior student mentoring programs, the use of health apps, and the integration of health programs into the academic curriculum. Measuring the effectiveness of these interventions can provide more concrete insights into the most successful strategies for increasing screening participation among students.

In relation to innovation and sustainability in increasing screening participation, specific policy interventions at the university level are recommended, such as incorporating health awareness into university curricula and establishing routine health screenings as part

of student wellness programs. Educational institutions should develop comprehensive policies that make health education a core component of all academic programs, regardless of discipline. Public-private partnerships represent another crucial approach to maintain free or reasonably priced screening services, where universities can collaborate with healthcare providers, insurers, and technology companies to create sustainable screening programs for students.

For long-term sustainability of these interventions, universities should establish dedicated funding mechanisms through student health fees or alumni contributions, create student-led health committees responsible for program continuity, and develop monitoring frameworks to regularly assess program effectiveness. Building screening awareness into institutional culture through recurring health campaigns and integration into orientation programs can ensure these initiatives persist beyond initial implementation. By addressing both immediate implementation and long-term sustainability of policy, educational, and technological interventions, universities can create enduring systems that improve student health outcomes related to non-communicable diseases.

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